





Soil

Fertile soil is the foundation for healthy, easy-to-care for lawns and gardens. Whether you are planting a new landscape or tending an old one, investing in soil improvement will pay back with years of healthy plants. Good gardeners know that fertile soil provides plants with nutrients. But do you know about these benefits of healthy soil?

-  **Protects plants against pests and diseases.**
-  **Reduces watering needs and plant stress during dry periods.**
-  **Stores and slowly releases nutrients for plants.**
-  **Traps pollutants that can contaminate streams.**

The Keys to Healthy Soil

Follow these simple steps to make sure that your garden soil has what it takes to grow healthy plants and conserve resources:



Step 1:
Dig in to learn
about your soil!

Step 2:
Dig down to loosen
compacted soil...or build up.

Step 3:
Feed the soil with
compost or other organic
materials.



Call Before You Dig.

Get your underground utility lines marked for free so you can avoid damaging them. Call 1-800-424-5555 or visit www.callbeforeyoudig.org.



1. Dig In To Learn About Your Soil!

Digging in is the best way to find out how good your soil is and what is needed to improve it. So grab a shovel and take a look!

When to check: The best time to look at soil is when it is moist, but not saturated. Try a day or two after a soaking rain or watering—you may have to let clay soil dry longer .

Where to dig: Dig 12 inch deep holes in several places around the lawn and garden. Check if the soil looks different around unhealthy plants.

What to look for: The chart below describes what healthy soil looks like, some signs of problems, and how to fix them.



WHAT ABOUT SOIL TESTS?

Professional laboratories can provide valuable advice for fertilizing gardens and helping diagnose plant problems, but yearly testing is not needed to manage most home landscapes. Home test kits are not as reliable as lab results, and they can be difficult to interpret. See the *Fertilizing* guide and the *Resources* listed on the back of this guide to learn more about soil testing. Vegetable gardens should be tested every few years. Test landscape soils before planting new areas.

How Good is Your Soil?

Healthy Soil	Problem Signs	Solutions
Loose 10 to 12 inches deep. You should be able to dig at least several inches deep with little effort using a sturdy shovel.	Compacted layers that stop a shovel also stop roots, water, and nutrients.	Dig or rototill to break up compact layers and mix in compost. Import topsoil or sheet mulch if soil is too compacted to dig.
Dark soil with lots of roots and decaying plant material that drains well yet holds water and nutrients for plants. Moist soil should form a firm ball when squeezed in hand, and crumble when poked with finger.	Light colored, gritty sand. Will not form a firm ball if squeezed. Holds little water or nutrients. Pure clay (often gray or blue) with no dark organic matter or grit. Brick-like when dry. Slick, sticky when wet. Stays too wet for healthy plant growth.	Mix in compost to improve sand. Composted bark or sawdust can help break up clay.
Plentiful worms, beetles and other soil life loosen soil, recycle nutrients, and control pests.	No visible soil life.	Mix in compost or add to surface as mulch.



2. Dig Down to Loosen Compacted Soil... Or Build Up

Every added inch of soil stores more water and nutrients! So dig down and add compost, or import topsoil to add depth to shallow or compacted soil.

Dig Down...

Work compacted soil using shovels, forks, or rototillers.

- Loosen soil 8 to 12 inches deep.
- Cultivate entire lawn areas and planting beds—not just small holes for each plant.
- Loosen a circle at least 4 feet wide—or twice as wide as large tree rootballs—to plant individual trees or shrubs among older plantings or lawn.

...Or Build Up

For badly compacted or poorly drained soils, importing topsoil is often easier and more effective than digging.

- Use "topsoils" made only with compost and clean sand, or clean sandy loam. Never use clay.
- Add enough topsoil to provide 8 to 12 inches of loose soil for plants.
- Mix some of the imported topsoil into a few inches of the existing soil to help roots and water penetrate.

"Sheet mulching" with layers of organic material also works. See the *Mulch* guide for details.

If soil is compacted, raised beds are a solution to poorly drained soils.

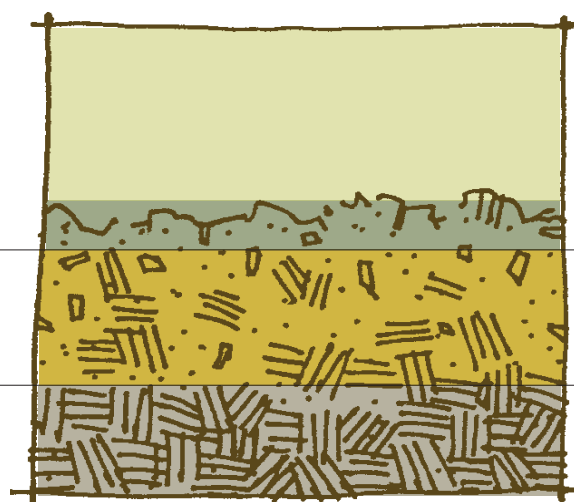


3. Feed the Soil with Compost or Other Organic Materials

Organic materials like compost, yard trimmings, animal manures, bark, or wood chips feed plants and soil life that help control pests and diseases, store moisture and nutrients for plants, and keep soil loose and well drained.

Mix Compost Into The Soil Before Planting...

Compost is the best organic material to mix into the soil before planting. Uncomposted organic materials mixed into the soil can make nutrients unavailable to plants and cause pest problems.



Making Healthy Soil

Organic mulch

Mixed organic and native soil

Existing native soil

🌱 **Mix compost throughout entire lawn areas and planting beds**, not just small holes for each plant.

- Add 1-2 inches for areas to be planted as lawns—more for sandy soils and less for clay soils.
- Use 2-3 inches for planting beds, and add 1 inch when replanting annual beds.

🌱 **Use a shovel, digging fork, or rototiller** to thoroughly mix compost into soil several inches deep.

🌱 **In areas with loose and well-drained soil** where only trees and shrubs will be planted, compost can simply be placed on the soil surface—without mixing with soil.

...and Mulch Established Plants with Compost or other Organic Materials

Organic materials placed on the soil surface prevent erosion and compaction, conserve water, feed plants, and build soil as they decompose. See the *Mulch* guide for more information.

🌱 **Mulch annuals and perennials with 1-2 inches** of compost or non-woody materials like manure or grass trimmings. Don't use sawdust or fresh bark that may make nutrients unavailable to plants.

🌱 **Mulch trees and shrubs with 2-4 inches** of coarse wood chips or medium (not fine) bark. Woody mulches last longer than compost and do a better job of preventing weeds and soil compaction.

🌱 **Spread mulches on entire planting beds or in rings** around plants.

🌱 **Keep mulch several inches away from plants** to prevent rot or hidden pest damage.

🌱 **Lawns can be mulched** with thin layers of compost or sand. See the *Lawn* guide for details.

RESOURCES



Bellevue's Natural Lawn and Garden website
www.bellevuewa.gov/natural_lawn_intro.htm

Bellevue's Natural Gardening Guides

Composting Food Scraps • Composting Yard Trimmings • Drip and Soak • Fertilizer • Garden Design • Lawn Alternatives • Lawns • Mulch • Pests, Weeds, and Diseases • Plant Right • Seasonal Calendar • Soil • Watering

For copies, visit Bellevue's Natural Lawn and Garden website (above) or call Bellevue Utilities at 425-452-6932.

WSU King County Extension Gardening Factsheet #6—Soil Testing and Soil Improvements

http://king.wsu.edu/gardening/documents/6SoilTestingandSoilImprovement_000.pdf

King Conservation District—Soil Testing Service
www.kingcd.org or 425-282-1905

The Garden Hotline
www.gardenhotline.org or 206-633-0224

Natural Yard Care Neighborhoods
www.naturalyardcare.info

Call Before You Dig
Free service to mark underground utility lines.
1-800-424-5555 or www.callbeforeyoudig.org



Local Hazardous Waste Management Program in King County, Washington

Brought to you by the City of Bellevue with partial funding from the Local Hazardous Waste Management Program of King County

Alternate formats available: Voice 425-452-6800 or TTY relay: 711.

